

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

Welding Innovation Solutions,
Inc.,

Plaintiff/Counter-Defendant,

v.

Case No. 13-cv-13131
Hon. Judith E. Levy

American Axle &
Manufacturing, Inc.,

Defendant/Counter-Plaintiff.
_____ /

CLAIM CONSTRUCTION DECISION

Plaintiff/Counter-Defendant Welding Innovation Solutions, LLC (“Welding” or “plaintiff”) commenced this action alleging patent infringement of its United States Patent numbered 5,828,028 (the “’028 patent”). The patent at issue protects a two-stage process to join components using resistance welding and hot forging. Some years after the filing of the ’028 patent, another manufacturing systems supplier began offering a two-stage axle assembly system. (Dkt. 40-4). Defendant/Counter-Claimant American Axle Manufacturing (“AAM” or

“defendant”) began using this system in its axle production lines in approximately 2004.

The parties jointly submitted a Claim Construction Statement on July 28, 2014. (Dkt. 29). On November 1, 2014, the Court held a hearing regarding the proper construction for the '028 patent.

I. Prosecution History

Dimitrios Cecil (“Cecil” or “the inventor”) applied for the '028 patent in June 1996.

The inventor sought to patent his invention, named “Hot Forging Method and Apparatus,” which he described as “[a]n apparatus and method for resistance welding and then hot forging first and second workpieces together.” ('028 at Abstract). Resistance welding is a process in which:

a housing having a neck that forms an opening for receiving the tube is provided. An aperture is formed on the neck of the housing to receive the plug. The tube is press-fit into the opening and the plug is inserted into the aperture. Electrodes then apply pressure to force the plug against the tube while electrical current passes through the interface between the plug and the tube. Heat generated by the current deforms the plug as the interface reaches a plastic state. The plug cools to become welded to the tube after the current is shut off. The welded plug acts like a fastener to secure the tube to the housing.

(*Id.* at 1:39-48). Hot forging changes the pressure to ensure that the two workpieces are joined together. (*Id.* at 6:43-45).

Figure Four, below, shows how the position of the electrode, the temperature of the rivet, and the pressure change over time during the patented process.

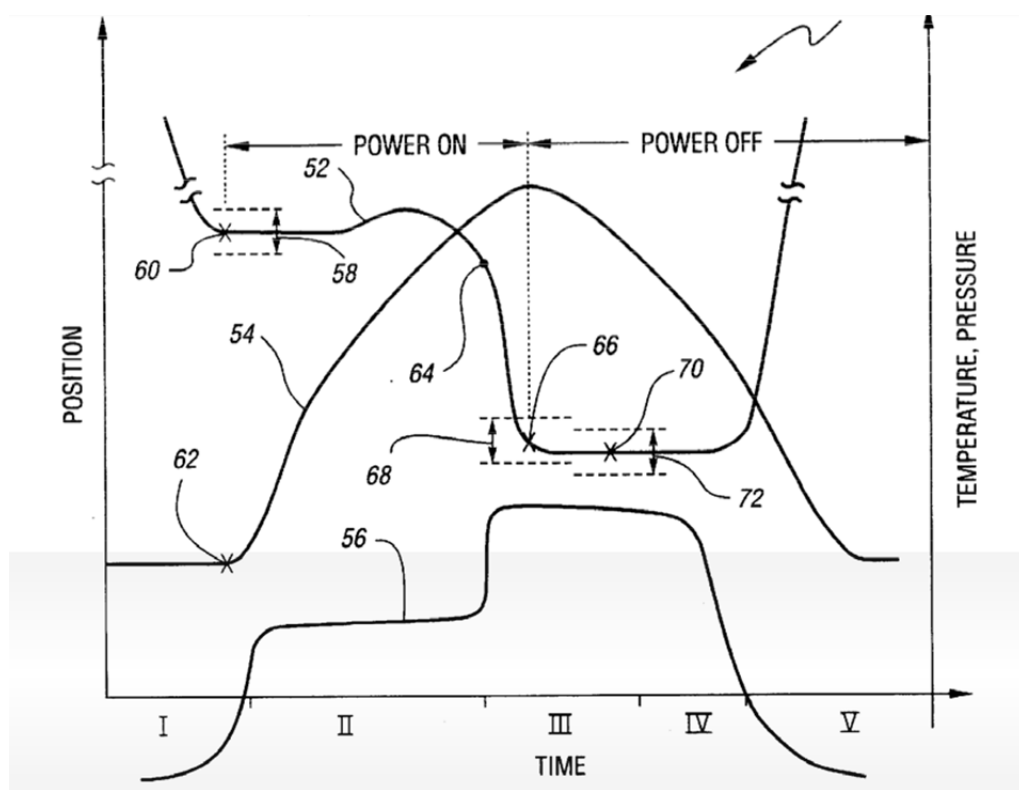


Fig. 4

In the above figure, line 52 represents the position of the hot forging electrode, line 54 represents the temperature of the deformable rivet, and line 56 represents the pressure applied to the deformable rivet.

The inventor believed that this process eliminated errors that often occurred when relying on other processes that depended on automated systems or human accuracy to join workpieces. ('028 at 2:56-67). Plaintiff contends that the process developed by the inventor can also be used to achieve a stronger weld by regulating the temperature and pressure applied to the rivet and by monitoring rivet deformation to ensure that the process starts, stops, and transitions at the appropriate time. (*Id.* at 1:65-2:19).

The patent was initially rejected in March 1998 as unpatentable over two prior patents, known as the Grimes and Killian patents. (Dkt. 40-7). The rejection noted that the Grimes patent only differed from Cecil's patent in that it used a mechanical switch mechanism to control the power supply rather than a transducer and controller. (*Id.* at 4). The existence of the Killian patent showed that it was already known that a transducer and controller could be used to impact "the deformation of the workpiece" and regulate the power supply. (*Id.*) Even though these pre-existing patents were not applied to the joining of an axle tube and axle housing unit, they were still known processes in the field, and the patent application was denied. (*Id.*)

Cecil amended the application to include additional language about the control methodology, or the means by which the pressure and power supply are monitored so that the pressure can be regulated when the hot forging electrode reaches a predetermined position. (Dkt 42-4 at 2-3, 6).

Following the amendments to the application, the patent was issued on October 27, 1998. The examiner noted that he agreed with Cecil's arguments regarding "the pressure regulator and controller (or corresponding steps) of the initial invention" and that "[a] joining apparatus as presently claimed and including [the pressure regulator and controller] feature is not shown or suggested by the prior art of record." (Dkt. 42-5 at 3).

II. Legal Standard

A court conducting a patent infringement analysis undertakes a two-step process. First, the court must determine the meaning and scope of the protected patents. This is known as the claim construction phase and is a question of law for the court. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 & 979. (Fed. Cir. 1995). Once the court has interpreted the claims at issue, the second step requires

comparing the properly construed claim and the accused device to determine whether the accused device is infringing. *Id.* at 976. The infringement analysis generally is for the jury.

“The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc., v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000) (quotation omitted). In construing the claim, courts should keep in mind that “the language of the claim defines the scope of the protected invention.” *Bell Commc'ns Research, Inc. v. Vitalink Commc'ns, Corp.*, 55 F.3d 615, 619 (Fed. Cir. 1995). For this reason, “resort must be had in the first instance to the words of the claim,’ words [which are ascribed] their ordinary meaning unless it appears the inventor used them otherwise.” *Id.* at 620 (quoting *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759 (Fed. Cir. 1984)). Further, “it is equally ‘fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention.’” *Id.* (quoting *United States v. Adams*, 383 U.S. 39, 49 (1966)).

In construing a claim, the court begins with an analysis of the ordinary meaning of the disputed claim terms. There is a heavy presumption that the terms used in the claim mean what they say and have the ordinary meaning that would be attributed to those words by persons having ordinary skill in the relevant art. *Texas Digital Sys., Inc. v. Telegenix, Inc.* 308 F.3d 1193, 1202 (Fed. Cir. 2002). If necessary, the Court will then look to other intrinsic evidence, including the specification, and the prosecution history if in evidence to determine the meaning of the words used in the claim. *Interactive Gift Express, Inc. v. CompuServe, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

“[W]ords of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history” unless (1) “a patentee sets out a definition and acts as his own lexicographer, or (2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir.2012) (citing *Vitronics Corp. v. Conepnetronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1980)); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

The Court may also consider extrinsic evidence “to aid [it] in coming to a correct conclusion as to the true meaning of the language employed in the patent.” *Markman*, 52 F.3d at 980 (quotations and citations omitted). Extrinsic evidence consists of all evidence external to the patent and prosecution history, including testimony of inventors or experts, dictionaries, and learned treatises. *Id.* Extrinsic evidence, will be granted less weight than intrinsic evidence in determining the meaning of claim language and “cannot be used to contradict the established meaning of the claim language.” *Gart v. Logitech*, 254 F.3d 1334, 1340 (Fed. Cir. 2001) (citing *Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.*, 152 F.3d 1368, 1373 (Fed. Cir. 1998)).

In sum, “the ordinary and customary meaning of a claim term may be determined by reviewing a variety of sources.” *Brookhill–Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 (Fed. Cir. 2003). These sources “include the claims themselves, dictionaries and treatises, and the written description, the drawings, and the prosecution history.” *Id.* (internal citations omitted); *see also Inverness Med. Switzerland GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1378

(Fed. Cir. 2002) (noting that dictionaries are often helpful in ascertaining plain and ordinary meaning of claim language).

There is a presumption that a term used throughout the claim will be construed consistently; however, there is no requirement that a term be construed uniformly, particularly when it might lead to a nonsensical reading. *See Rexnord v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001) (“a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent.”); *Phillips*, 415 F.3d at 1314 (Fed. Cir. 2005) (“claim terms are normally used consistently throughout the patent...”); *Microprocessor Enhancement Corp. v. Tex. Instruments, Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (finding that the use of an antecedent does not require that the term be construed consistently throughout the claim). “[T]he same claim term can have different constructions depending upon the context of how the term is used within the claims and specification.” *Aventis Pharms., Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1374 (Fed. Cir. 2013).

Construing the same term in a different light depending on its use should be based on “the knowledge of ordinary skill in the art.” *Id.*

(finding that different interpretations were proper for the term “substantially pure” depending on its use throughout the claims at issue). Varied use of a term throughout the patent, however, may show that a broader definition of the term is most appropriate. *See Johnson v. Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 991 (Fed. Cir. 1999).

III. Term Construction

The parties disagree on the construction of the following terms: (1) “hot forging” and “hot forging electrode,” (2) “rivet,” (3) “regulate,” and (4) “predetermined position.” The parties also dispute whether certain language in the claim preambles should be construed as limiting.

A. Issues Related to the Term “Hot Forging”

The parties disagree on the definition, how to construe additional words surrounding “hot forging” in the claim, and whether the claim preamble is limiting.

i. *Construction of Hot Forging*

Plaintiff’s Proposed Construction: A process that instantaneously changes the pressure applied to a

sufficiently-heated material from a low to a high pressure in order to help join two workpieces.¹

Defendant's Proposed Construction: Deformation by instantaneously changing the pressure applied to a sufficiently-heated material from a low to a high pressure.

Defendant urges the Court to rely on common definitions of “forging” when construing the term “hot forging.” Defendant points to common and technical definitions that describe forging as “forming” or “deformation” of a metal so that it assumes a new form. (See Dkts. 42-6, 42-7, & 42-8). Plaintiff argues that defendant seeks too limiting a construction. While hot forging may utilize deformation, plaintiff contends that hot forging is a process and that deformation is merely a mechanism by which hot forging works. (Dkt. 40 at 15). Plaintiff argues that its construction, furthermore, is more consistent with “hot forging’s” common definition as well as how the term is used throughout the patent. (*Id.*)

Weighing these definitions against the intrinsic evidence, the Court finds that plaintiff’s proposed construction is more consistent

¹ In plaintiff’s initial filings, it suggested that the construction include the phrase “join materials.” During oral argument, both plaintiff’s and defendant’s counsels agreed that if the Court were to adopt plaintiff’s proposed construction, it would be appropriate to use “two workpieces” instead of “materials.”

with the claim language. Claims one and five, for example, read “hot forging first and second workpieces together.” (’028 at 8:59-60 & 9:40-41). When replacing “hot forging” with the proposed constructions, “a process... to join first and second workpieces together” reads more naturally, is less confusing, and better describes the patent than “deforming first and second workpieces together.” The claim language, furthermore, describes a process of joining that includes deforming of the rivet as part of the process of joining the workpieces. (’28 at 6:34-7:28). This strikes the Court as inconsistent with defendant’s more narrow construction. The fact that the claim refers to a “deformable rivet” several times throughout the claim is not inconsistent with plaintiff’s construction.

Defendant’s concern that the term “process” is too broad to explain what “hot forging” does is alleviated by the fact that the “process” is limited by the rest of the language in plaintiff’s construction.

Accordingly, the Court will adopt plaintiff’s construction of “hot forging” as “a process that instantaneously changes the pressure applied to a sufficiently-heated material from a low to a high pressure in order to help join two workpieces.”

ii. *Hot Forging Electrode*

Plaintiff's Proposed Constructions: An electrode used to apply pressure to at least one of the materials to be joined in a hot forging process.

or, in the alternative,

An electrode used to deform a material by instantaneously changing the pressure applied to a sufficiently-heated material from low to a high pressure.

Defendant's Proposed Construction: Electrode should be accorded its ordinary meaning.

Plaintiff argues its construction describes the function of a hot forging electrode as described in the patent. It points out that such a construction is important because the Court needs to give meaningful guidance to the jury. *See Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed. Cir. 2004) (“the district court normally will need to provide the jury in a patent case with instructions adequate to ensure that the jury fully understands the court's claim construction rulings and what the patentee covered by the claims.”)

The Court, however, shares defendant's concerns that plaintiff's construction will fail to add to the jury's understanding of the claim language because (1) plaintiff's first proposed construction of “hot forging electrode” uses a different definition of hot forging than its

proposed construction of “hot forging” and (2) plaintiff’s second construction uses the word electrode to define “hot forging electrode.”

Plaintiff seeks to focus the jury’s understanding of the type of electrode used in the patent; however, the type of electrode is implicitly limited by the preceding words, “hot forging,” which have already been construed by the Court to mean “a process that instantaneously changes the pressure applied to a sufficiently-heated material from a low to a high pressure in order to help join two workpieces.” The Court’s construction of “hot forging” makes it clear that a “hot forging electrode” is an electrode used in that process.

The Court finds that according the term “electrode” its ordinary meaning will sufficiently ensure that the jury fully understands what is covered by the claims. *See Sulzer*, 358 F.3d at 1366. Thus, the Court will accord the term “electrode” its ordinary meaning.

iii. Whether the preambles of claims 1 and 5 are limiting

There is no simple test for determining whether the text in a preamble limits the scope of a claim.

No litmus test can be given with respect to when the introductory words of a claim, the preamble, constitute a statement of purpose for a device or are, in themselves,

additional structural limitations of a claim. To say that a preamble is a limitation if it gives “meaning to the claim” may merely state the problem rather than lead one to the answer. The effect preamble language should be given can be resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.

Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed. Cir. 1989). Typically, a preamble is limiting “if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (internal quotations omitted). “Conversely, a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Id.* “Absent clear reliance on the preamble in the prosecution history, or in situations where it is necessary to provide antecedent basis for the body of the claim, the preamble generally is not limiting.” *Symantec Corp. v. Comp. Assoc. Intl. Inc.*, 522 F.3d 1279, 1288 (Fed. Cir. 2008) (internal quotations omitted).

If the body of the claim “fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble

offers no distinct definition of any of the claimed invention's limitations... then the preamble is of no significance.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). “[I]f [the preamble] is reasonably susceptible to being construed to be merely duplicative of the limitations in the body of the claim..., we do not construe it to be a separate limitation.” *Symantec*, 522 F.3d at 1288-89; *see also Am. Med. Sys., Inc. v. Boilitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (quoting *Catalina*, 289 F.3d at 809).

Where the claim uses the preamble to define the subject matter as well as the body, however, the patent still protects that definition. *Bell*, 55 F.3d at 620.

The preambles at issue before the Court are as follows:

For Claim 1: a joining apparatus for hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet, the apparatus comprising...

For Claim 5: A method of hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet...

(‘028 at 8:59-63 & 9:40-44).

Defendant argues that the claims are fully defined in their bodies.

In claim one, for example, the first paragraph of the body states:

an assembly fixture for supporting the first and second workpieces to be joined with the deformable rivet of the first workpiece extending through the aperture in the second workpiece...

(’028 at 8:64-67). In claim five, the first paragraph of the body states:

placing the first and second workpieces together with the deformable rivet of the first workpiece extending through the aperture in the second workpiece to engage the first workpiece;

(’028 at 9:45-48).

Plaintiff compares the preamble here to *On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331 (Fed. Cir. 2006) and argues that the preambles here limit the claim because they provide a structure (claim one) and method (claim five). In *On Demand*, the Federal Circuit found that a preamble was limiting when it “state[d] the framework of the invention.” *Id.* at 1333.

Defendant argues, however, that the comparison to *On Demand* is inappropriate because none of the language that appeared in the preamble in that case also appeared in the body of the claim. (Dkt. 42 at 17). Here, there is significant duplication. In *Symantec*, for example,

the Federal Circuit held that even where different words were used, if the words essentially had the same meaning as language already in the body, then the preamble would not be limiting. *Symantec*, 522 F.3d at 1290 (finding that “as it is being transferred” essentially had the same meaning as “prior to storage” and therefore was not limiting). Defendants argue that, to the extent there are different words in the preamble, such as “a joining apparatus” and “a method,” the preamble could be removed and not affect the claim in any way. (Dkt. 42 at 16); *see Catalina*, 289 F.3d at 809.

Plaintiff points to the language in the preamble that differs from the language in the body of the claim to show that the preamble provides an antecedent basis for the claim and should be limiting. At oral argument, defendant’s counsel acknowledged that language in the body of the claim derived meaning from the preamble. (Hearing Tr. At 35-36). While such derivation or reliance on an antecedent basis *may* show that the preamble is a “necessary component of the claimed invention... [o]n the other hand, if the body of the claim sets out the complete invention, then the language of the preamble may be

superfluous.” *Eaton Corp. v. Rockwell Intern. Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (internal quotations and citations omitted).

There is a fine line between preamble language that is intimately meshed with, rather than entirely duplicative of, the language in the body of the claim. *See Pitney Bowes*, 182 F.3d at 1306. Here, while the preambles are the only place that make mention of “a joining apparatus” or “a method,” the Court finds that the preamble language at issue is duplicative enough that it is not “necessary to give life” to the claim.² *See Eaton Corp.*, 323 F.3d at 1339; *Catalina*, 289 F.3d at 808.

The preamble of claim one describes the patent as “a joining apparatus for hot forging first and second workpieces together.” (’028 at 8:59-60). The body of that claim subsequently describes “an assembly fixture for supporting the first and second workpieces to be joined.” (*Id.* at 8:64-65). These phrases essentially have the same meaning. They both describe something that joins the workpieces together. The Court

² Plaintiff’s reliance on the *Proveris* case to support finding the preamble limiting is misplaced because the preamble in that case included significant language that was not found anywhere else in the body of the claim. *See Proveris Scientific Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (finding that the preamble at issue was the only reference “to the inventive concept of capturing a sequence of images in order to characterize the time evolution of the spray plume.”)

does not share plaintiff's concern that without finding the preamble language to be limiting, hot forging will be read out of the claim. The body of claim one also includes the term "hot forging electrode." Given the Court's construction of that term, it is implicit that claim one involves "a process that instantaneously changes the pressure applied to a sufficiently-heated material from a low to a high pressure in order to help join two workpieces."

Similarly, the preamble of claim five describes "a method of hot forging" where the body of the claim discusses "hot forging electrodes," which have previously been construed by the Court as something involved in "a process." The Court views the words "method" and "process" as essentially having the same meaning. *See Symantec* 522 F.3d at 1290. As previously noted, furthermore, a hot forging electrode is necessarily involved with the hot forging process.

The fact that the terms "a joining apparatus" and "a method" are already encompassed by the language in the body of the claim distinguishes this case from *Pitney Bowes*, where the Federal Circuit found that preamble language describing the patent as a method or apparatus was limiting. *See Pitney Bowes*, 182 F.3d at 1306 ("the

patent claims a method [] or apparatus [...[that] is not merely a statement describing the invention's intended field of use. Instead, the statement is intimately meshed with the ensuing language in the claim.").

The rest of the language in the preamble is duplicative of language found elsewhere in the body of the claim and "offers no distinct definition of any of the claimed invention's limitations." *See Pitney Bowes*, 182 F.3d at 1305.

Accordingly, as the language in the preambles is not necessary to give life to the claim, the Court finds that the preambles of claims one and five are not limiting. *See Catalina*, 289 F.3d at 809.

B. Rivet

Plaintiff's Proposed Construction: cylindrical plug, ball, or the like.

Defendant's Propose Construction: cylindrical plug, ball or similar object.

The parties merely disagree as to whether the construction of the term should conclude with "the like" or "similar object." The Court will adopt plaintiff's proposed construction using "the like" as the claim language uses the same word to describe the term at issue. ('028 at

3:25-27); *see NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1310 (Fed.Cir. 2005).³

C. Predetermined Position

Plaintiff's Proposed Construction: No construction necessary or “a position imposed beforehand.”

Defendant's Proposed Construction: A position indicative of a degree of contraction of the deformable rivet during application of heat to the deformable rivet as indicated by

- (1) an output of the transducer (for claim 1)
- (2) the monitored position of the hot forging electrode (for claim 5 and 9)

Plaintiff urges the Court to rely on the ordinary understanding of the term “predetermined.” As previously noted, “resort must be had in the first instance to the words of the claim,’ words [which are ascribed] their ordinary meaning unless it appears the inventor used them otherwise.” *Bell*, 55 F.3d at 620 (quoting *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759 (Fed. Cir. 1984)).

The question remains whether the term “predetermined position” as used in the body of the claims shares this ordinary meaning or whether the evidence supports defendant’s argument that a narrower

³The Court does not share defendant’s concern that using the term “the like” will be confusing to the jury.

construction is appropriate for how the term is used in claim one and in claims five and nine.

“Predetermined position” is used three times in the body of the claims as follows:

Claim One: “wherein the controller... regulates the force exerted by the hot forging electrode on the deformable rivet when the hot forging reaches a *predetermined position* to ensure that the deformable rivet properly deforms.”

Claims Five and Nine: “regulating the power output of the resistance heating power supply as a function of rivet deformation and regulating a force exerted by the hot forging electrode on the deformable rivet when the hot forging electrode reaches a *predetermined position* to ensure that the deformable rivet properly deforms”

(’028 at 9:20-25, 10:8-13, & 10:44-49) (emphasis added).

There is a presumption that a term used throughout the claim will be construed consistently; however, there is no requirement that a term be construed uniformly, particularly when it might lead to a “nonsensical reading.” *Rexnord*, 274 F.3d at 1342 (Fed. Cir. 2001).

Plaintiff notes that the word “predetermined” is used throughout the patent in a way that the ordinary meaning would apply. (’028 at 1:57-62) (“... though a common weld schedule is programmed for a predetermined level of current.”) This argument, however, seems to

extend *Rexnord*, which tells the Court to apply terms consistently as used in “*claims* of the same patent,” beyond its intended application. *Rexnord*, 274 F.3d at 1342 (emphasis added). The language that plaintiff cites is outside the body of the claim. *Rexnord* is only relevant to the extent that defendant seeks to construe “predetermined position” differently in claim one than in claims five and nine. *See id.*

Defendant, first, argues that language in the prosecution history “confirm[s] that the predetermined position is not any position, but the specific position in time and space” at forge point 64. (Figure 4, Dkt. 42 at 25-26); *see Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1265-67 (Fed. Cir. 2012) (construing “conical beam of light” limiting the shape of a reflector and position of a light source based on an argument the patent holder made during reexamination of the patent application); *Voda v. Cordis Corp.*, 536 F.3d 1311, 1319-20 (Fed. Cir. 2008) (defining “along a line,” in the context of the claim, as a position of a catheter during use); *Wang Labs Inc. v. America Online, Inc.*, 197 F.3d 1377, 1383 (Fed. Cir. 1999) (“when the preferred embodiment is described as the invention itself, the claims are not entitled to a broader scope than that embodiment.”)

“Whether an invention is fairly claimed more broadly than the ‘preferred embodiment’ in the specification is a question specific to the content of the specification, the context in which the embodiment is described, the prosecution history, and if appropriate the prior art, for claims should be construed, when feasible, to sustain their validity.” *Wang Labs*, 197 F.3d at 1383.

Defendant argues that the “predetermined position” is not just a preferred embodiment but “the very essence of the invention.” (Dkt. 42 at 28). Defendant relies on the following:

Once deformable rivet 16 contracts to a sufficient level *such as forge point 64* on position curve 52, controller 40 commands actuator 38 to step instantaneously the constant low pressure applied on hot forging electrode 36 to a constant high pressure.

The pressure changing instantaneously from low to high on a sufficiently heated deformable rivet 16 is the basis of hot forging.... Thus, *an advantage* of the present invention is that controller 40 monitors the deformation of deformable rivet 16 during the resistance welding interval to determine precisely when to command actuator 38 to step up the pressure.

(‘028 at 6:35-53) (emphasis added).

The inventor’s amendment to his application notes, furthermore:

In contrast to the claimed invention in which the controller regulates the force when the electrode reaches a predetermined position... [t]he Grimes '033 patent does not teach or suggest regulating the force exerted on the rivet when the electrode reaches a predetermined position.

The Killian '785 also does not teach or suggest regulating the force exerted on the rivet when the electrode reaches a predetermined position.

(Dkt. 42-4 at 7).

The fact that the prosecution history suggests an advantage of the claims does not require the Court to import a limitation from that advantage. *See E-Pass Techs, Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003) (“An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them.”); *Brookhill-Wilk 1*, 334 F.3d at 1301 (Fed. Cir. 2003) (“[a]dvantages described in the body of the specification, if not included in the claims, are not per se limitations to the claimed invention.”) Just calling an aspect of the invention an “advantage,” however, “does not of itself broaden the claims beyond their support in the specification.” *Wang Labs*, 197 F.3d at 1383.

“Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Liebel-Flarsheim Co v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (internal quotations omitted); *see also Brookhill-Wilk 1*, 334 F.3d at 1301 (construing the term “remote” broadly even though the patent only described performing a procedure without the surgeon present in the same room as the patient); *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1371 (Fed. Cir. 2003) (declining to read an order of steps into method claims, even though such steps were the only embodiment described, because there was no disclaimer or surrender of any other order of steps.)

Unlike *Voda* and *Krippelz*, the inventor of the patent at issue did not present a “clear intention to limit the claim scope” by describing the invention’s preferred embodiment. *See Liebel-Flarsheim*, 358 F.3d at 908; *Voda*, 536 F.3d at 1319-20; *Krippelz*, 667 F.3d at 1265-67. While the inventor noted, in his amended application, that his invention differed from prior art, in part, because the process was triggered at a

“predetermined position,” the language in the patent’s prosecution history does not provide any definition of “predetermined position.” The Court will not read an additional limitation into the patent. *See Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1341-42 (Fed. Cir. 2012) (finding that there was no limiting disclaimer in the prosecution language because, even though the patentee distinguished its invention from prior art based on a limitation, it did not define or narrow that limitation).

The reviewer’s conclusion and approval, furthermore, indicates that the inclusion of the term “predetermined position” was not necessarily a determining factor in deciding to grant the patent. The reviewer wrote, for example, that it “agree[d] with applicants arguments concerning... the pressure regulator and controller (or corresponding steps) of the initial invention” and that “[a] joining apparatus as presently claimed and including [the pressure regulator and controller] feature is not shown or suggested by the prior art of record.” (Dkt. 42-5).

For these reasons, the Court will not read the preferred embodiment of the patent as limiting.

Even if the Court were to construe the preferred embodiment as limiting, defendant's construction would still be improper. According to defendants, in the context of the claim language, "predetermined position" does not mean any predetermined position, but a very specific one that occurs during application of heat to the deformable rivet indicated by an output of the transducer (claim one) or the monitored position of the hot forging electrode (claims five and nine).

Defendant's attempt to narrow "predetermined position" to a specific point in time and space, however, fails to construe "predetermined position" in a way that is consistent with how the '028 patent actually works. Defendant's construction for the claims argues that the "predetermined position" is "a position indicative of a degree of contraction of the deformable rivet during application of heat to the deformable rivet..." Defendant suggests that the "predetermined position" is the forge point, yet its proposed construction would permit a range of random positions to fall within the predetermined position. Looking at Figure Four, heat is applied at point 62, so any point along line 52 between point 60 and point 66 would fall within defendant's definition of "predetermined position." ('028 at Figure Four).

Defendant's proposed construction, furthermore, is not tethered to the ordinary meaning of "predetermined," which is an adjective that describes an attribute of "position." Instead, defendant seeks to link the predetermined position to *how* it is detected: as either indicated by (1) an output of the transducer (for claim one) or (2) the monitored position of the hot forging electrode (for claims five and nine). The claim language in the patent, however, does not purport to limit the method of detection in time or space.

Finally, the language in defendant's construction indicates that the "predetermined position" exists "during the application of heat." This is not necessarily the case. The "predetermined position," at which point the force and/or power output is regulated, *may* occur "during the application of heat;" however, it might also occur when heat is not being actively applied but has still reached a sufficient temperature. ('028 6:21-22, 6:30-33, and 6:56-60).

Accordingly, defendant's construction is impermissibly untethered to the claim language. *See Purdue Pharma L.P. v. Edno Pharm. Inc.*, 438 F.3d 1123, 1136-37 (Fed. Cir. 2006) (finding that it would be improper to construe the term "controlled release" to require pain

control in “90% of patients over a four-fold dosage range” without more specific language in the claim itself).

Plaintiff’s construction is, in fact, more consistent with defendant’s argument that the predetermined position is the forge point. If the predetermined position is the forge point, the broader definition of the term “predetermined” fits with the language of the claims.

The Court will accord “predetermined position” its ordinary meaning.

D. Regulate

i. Regulates the Power Output

Plaintiff’s Proposed Construction: fixes or adjusts the power output.

Defendant’s Proposed Construction: adjusts the power output.

Plaintiff’s construction is consistent with the plain and ordinary meaning of the word “regulate.” (Dkt. 40 at 22-23). To depart from that ordinary meaning, “[i]t is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must clearly express an intent to redefine the term.” *Thorner*, 669 F.3d at 1365 (internal quotations and citations

omitted); *but see Honeywell Intern., Inc. v. Universal Avionics Sys. Corp.*, 493 F.3d 1358 at 1362 (Fed. Cir. 2007) (“[a] claim term may be defined in a particular manner for purposes of a patent even without an explicit statement of redefinition.”) (internal quotation and citation omitted)

Defendant argues that the inventor demonstrated such an intention to deviate from the ordinary meaning of “regulate” in the following passages:

Controller 40 regulates the power output of power supply 34 as a function of rivet deformation to ensure that deformable rivet 16 properly deforms. Controller 40 regulates the power output of power supply 34 by varying the power level and the power duration.

The apparatus of claim 1 wherein the controller regulates the power output of the resistance heating power supply by varying power level and power duration.

The method of claim 5 wherein regulating the power output of the resistance heating power supply includes varying power level and power duration.

(‘028 at 4:52-56, 9:26-28, & 10:14-16).

Even though one instance describes regulation as “varying the power level,” plaintiff argues that it is not sufficient to deviate from the ordinary meaning and that the cited description is merely a preferred embodiment. Plaintiff relies, in part, on the following language to show that there is no requirement that the power output be varied throughout the process:

The power applied by power supply 34 may be AC or DC electrical power. It may also take a variety of input patterns such as pulse, ramp, sinuisoidal, sawtooth, etc. depending on the application, the type of power supply, and on the thicknesses and type of materials used.

(‘028 at 6:12-16). Plaintiff argues that claim one, which uses the term “regulates the power output,” is not limited by the “varying power” language found in claim two, which *is* limited to the preferred embodiment. (‘028 8:59-9:27). Plaintiff suggests that the inventor would not have needed language describing regulation as “varying” elsewhere in the patent if his intended definition of “regulate” was already limited to that specification. “Varying” is used in claims two and six, according to plaintiff, because the inventor’s intent was to have a broader definition of the word as used in claims one and five. (Dkt. 43 at 13). *See Kara Tech Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1347

(Fed. Cir. 2009) (“when the inventor wanted to restrict the claims to require the use of a key, he did so explicitly.”)

The Court agrees with plaintiff’s interpretation that the claim language does not sufficiently show that the inventor intended to deviate from the ordinary meaning of the term “regulate.” The use of the word “varying” in claims two and six are evidence of a preferred embodiment that should not limit the definition of the term. *See id.*; *Thorne*, 669 F.3d at 1365. The cases relied upon by defendant, furthermore, are distinguishable from this case. In *Honeywell*, for example, the Federal Circuit construed the term “heading” in a patent related to aircrafts approaching a runway. 493 F.3d at 1362. The Federal Circuit ultimately found that “heading” had a narrower definition than its ordinary meaning because the specification in the patent disclosed only one form of alignment between the aircraft and the runway. *Id.* at 1362-63. In *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337 (Fed. Cir. 2001), the Federal Circuit similarly deviated from the ordinary definition of a term where the “written description ma[de] clear” that the patentee intended a narrower construction to apply. *Id.* at 1344. Here, the inventor

identified several forms of power supply that might be used as embodiments of the invention, including direct current power, which is capable of providing a constant power supply. (028 at 6:12-16).

The Court does, however, share defendant's concern that "fixes" might be understood by a jury as something more permanent.

Accordingly, the Court will construe "regulates the power output" to mean "holds constant or adjusts the power output."

ii. Regulates the Force

Plaintiff's Proposed Construction: fixes or adjusts the force.

Defendant's Proposed Construction: increases the force.

There is a presumption that terms used through the claim will be construed consistently. *See Rexnord*, 274 F.3d at 1342; *Phillips*, 415 F.3d at 1314. The Court may construe the same terms differently where the context for how the term is used within the claims and specifications indicates that different constructions are appropriate. *See Aventis*, 715 F.3d at 1374; *but see Zebco*, 175 F.3d at 991 (Fed. Cir. 1999) ("[v]aried use of a disputed term... demonstrates the breadth of the term rather than providing a limited definition.")

Here, plaintiff interprets the term "regulates" the same way it did in "regulates the power output." Plaintiff argues that defendant's

construction deviates from the ordinary meaning of the word without justification. As plaintiff notes, if something is only able to increase the force, it cannot truly be said that it “regulates” the force. Had the inventor intended “regulate” to only mean “increase,” he could have used that word instead.

To show that a different construction is appropriate for the term “regulate” when used with “force,” defendant points to language in the amended claim that states that the pressure is instantaneously changed from low to high. (Dkt. 42-4 at 6). This language, however, is distinguishable from *North Am. Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335 (Fed. Cir. 2005), where the Federal Circuit interpreted the same terms differently because of explicit language within the prosecution history explaining that the invention did not cover slightly concave walls. *See id.*, 415 F.3d at 1345-46. In this case, there is no such explicit limitation on the meaning of “regulate.” The prosecution history shows that the inventor distinguished his patent from the prior art based on the fact that they did “not teach or suggest regulating the force,” not on their failure to only *increase* the force. Language in the prosecution history shows, furthermore, that changing

the pressure from low to high “is the basis of *hot forging*,” not a definition of “regulate.” (Dkt. 42-4. at 6) (emphasis added). Indeed, that connection between increasing the pressure and “hot forging” is contemplated by both parties’ proposed construction of “hot forging”.

Language in the body of claim one also indicates that “a pressure regulator” is used “for *varying* a force.” (’028 at 9:11-12) (emphasis added). In turning to Figure Four, once again, the Court sees that defendant’s construction is not consistent with how the invention functions. There is an increase of pressure that occurs along line 56 at the beginning of the hot forging interval. (Dkt. 42-4. at 6) (“an advantage... is that the deformation... is monitored during the resistance welding interval to determine precisely when to step up the pressure.”) But even after the step up in pressure, throughout Time III, the pressure remains regulated so that it can be held constant or even varied. (’028 at 6:34-38 & Figure Four).

Plaintiff’s broader and consistent construction of the term “regulate” remains appropriate when used with respect to pressure. *See Zebco*, 175 F.3d at 991. Accordingly, the Court will construe “regulates the force” to mean “holds constant or varies the force.”

IV. Conclusion

For the reasons set for above, IT IS HEREBY ORDERED that:

The disputed terms shall be construed as follows:

Hot forging	A process that instantaneously changes the pressure applied to a sufficiently-heated material from a low to a high pressure in order to help join two workpieces
Electrode	Electrode shall be accorded its ordinary meaning
Rivet	Cylindrical plug, ball, or the like
Predetermined Position	Predetermined position shall be according its ordinary meaning
Regulates the Power Output	Holds constant or adjusts the power output
Regulates the Force	Holds constant or adjusts the force

The preambles of claims one and five shall not be construed as limiting.

Dated: April 6, 2015
Ann Arbor, Michigan

s/Judith E. Levy
JUDITH E. LEVY
United States District Judge

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document was served upon counsel of record and any unrepresented parties via the Court's

ECF System to their respective email or First Class U.S. mail addresses disclosed on the Notice of Electronic Filing on April 6, 2015.

s/Felicia M. Moses
FELICIA M. MOSES
Case Manager